

The Listing of the Claims:

This listing of claims will replace all prior versions and listing of claims in the application.

- 1.-2. (cancelled)
3. (canceled)
4. (previously amended) A serine recombinase consisting of the amino acid sequence of SEQ ID NO: 2 wherein said amino acid sequence contains a single mutation at G101.
- 5.-45. (cancelled)
46. (previously amended) A catalytic domain of a serine recombinase which has been mutated at G101 or at a position corresponding to G101 of Tn3 resolvase (SEQ ID NO: 2), wherein said catalytic domain comprises one or more mutations of the surface residues corresponding to a '2,3' interface and said catalytic domain contains one or more additional mutations at a position selected from the group consisting of V107, A117, A89, F92, L66, G70, M76, T109 and R121; or a position corresponding to V107, A117, A89, F92, L66, G70, M76, T109, and R121 of Tn3 resolvase (SEQ ID NO: 2).
47. (previously amended) The catalytic domain according to claim 46 wherein the mutation is G101S.
- 48.-51. (cancelled)
52. (previously amended) The catalytic domain according to claim 46 further comprising one or more additional mutations selected from the group consisting of E124Q, E124A, and M103I or at positions corresponding to these mutations in Tn3 resolvase (SEQ ID NO: 2).
53. (cancelled)
54. (previously amended) The catalytic domain according to claim 46 wherein the one or more mutations of the surface residues corresponding to a '2,3' interface include R2A and E56K or positions corresponding to R2A and E56K in Tn3 resolvase.
55. (canceled)

56. (canceled)

57. (previously amended) The catalytic domain according to claim 46 further comprising the mutations R2A, E56K, D102Y, M103I and Q105L or the positions corresponding to these mutations in Tn3 resolvase.

58. (previously amended) The catalytic domain according to claim 57, wherein the catalytic domain comprises the mutation V107F or the position corresponding to this mutation in Tn3 resolvase.

59. (currently amended) The catalytic domain according to claim 46 which is selected from the group consisting of Tn3 resolvase (SEQ ID NO:2), Sin recombinase (SEQ ID NO:5), γ S γ δ resolvase (SEQ ID NO:1), Tn 21 resolvase (SEQ ID NO:3), Φ resolvase (SEQ ID NO:4), ISXc5 resolvase (SEQ ID NO:6), Gin resolvase (SEQ ID NO:7), Hin resolvase (SEQ ID NO:8), Methanococcus jannaschii resolvase (SEQ ID NO:9), 45S607 resolvase (SEQ ID NO:10), ccrA1 resolvase (SEQ ID NO: 11), TN4451 resolvase (SEQ ID NO:12), TP901-1 resolvase (SEQ ID NO:13) and Θ FC31 resolvase (SEQ ID NO:14).

60.-66. (cancelled)

67. (previously amended) A kit for recombining a first DNA sequence and a second DNA sequence said kit comprising a serine recombinase with the catalytic domain according to claim 46.

68.-69. (cancelled)